

MULTIMODAL TRANSPORTATION MODELING CAPABILITY

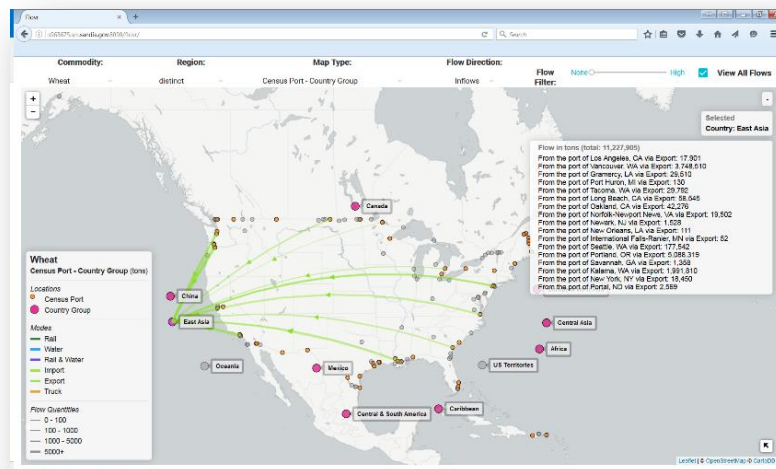
MODEL OVERVIEW

The National Infrastructure Simulation and Analysis Center (NISAC) developed modeling techniques for integrating single-mode transportation datasets into an integrated data set that tracks the movement of a commodity over multiple transportation modes. By integrating multiple transportation datasets into a single dataset, analysts can understand 1) the ultimate origin and destination of a commodity, 2) national-level traffic patterns, 3) critical elements of the transportation system, and 4) transportation modes used. A geospatial web application has also been developed, allowing analysts to query resulting data.



MODEL CHARACTERISTICS

- ▶ Detailed description of movement of goods over multiple transportation modes based on best-in-class data.
- ▶ Integrated import, export, and domestic datasets for low-value, bulk commodities.
 - Corn, soybeans, wheat, iron ore, and coal
 - Transportation modes: rail, domestic water, water-based foreign trade, and land-based foreign trade
- ▶ Integrated import dataset for containerized cargo.
 - Transportation modes: rail, truck, and water-based foreign trade
- ▶ Interactive web application for visually analyzing the flow of goods between U.S. counties and Bureau of Economic Analysis regions, ports of import/export, and foreign regions by transportation mode.



MODEL APPLICATIONS

- ▶ Analysis of disruptions to domestic and foreign commodity transportation involving the United States, to include:
 - Natural hazard impact analysis for exercises and rapid response activities (e.g., hurricane or earthquake)
 - Analysis to support hurricane preparedness planning
 - Transportation support for supply chain analysis efforts



QUESTIONS ADDRESSED

Given an event that will impact a component of the transportation system or a commodity of interest, this capability can answer the following types of questions:

- ▶ Which countries around the world rely on a given port for trade with the United States?
- ▶ What transportation modes and facilities does a U.S. region rely on to ship or receive goods?
- ▶ Which elements of the transportation system, if disrupted, would produce the largest impact to the normal flow of goods?

ABOUT OCIA

The Department of Homeland Security, National Protection and Programs Directorate's (NPPD) Office of Cyber and Infrastructure Analysis (OCIA) manages NISAC, which is a Congressionally mandated center of excellence in modeling, simulation, and analysis of critical infrastructure.

CONTACTS

Office of Cyber and Infrastructure Analysis
National Protection and Programs Directorate
U.S. Department of Homeland Security

For more information, contact OCIA@hq.dhs.gov or visit our website: www.dhs.gov/office-cyber-infrastructure-analysis.